## REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendments and the following remarks.

Claim 1 has been amended to positively recite that the invention verifies phonetic units can be used in a speech synthesizer, as explained for example in lines 9-17 on page 4 of the specification.

In addition, claim 1 has been amended to recite verification of confidence measures of all cutting points of the N test speech unit segments, which is supported for example by the description of "every" N test speech unit segment 121 having an initial cutting point (page 8, lines 2-3), and of performing fine adjustment on "every" initial cutting point (page 8, lines 10-14) and integrating the initial cutting point and adjustment values to provide weighted values for verification (page 9, lines 2-4), the resulting cutting point information (obtained from every initial cutting point) being sent to the segmental and phonetic verifiers for verification of respective confidence measures (page 9, lines 16 *et seq.*).

Because the amendments to the claims are all supported by the specification as originally filed, it is respectfully submitted that they do not involve "new matter."

**Response to Rejections Under 35 U.S.C. § 101**

The rejection of claims 1-9 under 35 U.S.C. 101 has been addressed by positively reciting that the acceptance of the phonetic units is for **output** to a **speech synthesizer**.

In particular, the preamble of claim 1 now recites the method of the invention is for segmenting into speech unit segments and verifying said speech unit segments by determining which phonetic units defined by a known text script are to be accepted for output, said phonetic units accepted for output being used for speech synthesis. Speech synthesis is clearly a practical and "real world" application, and the invention plays a tangible role in such application by taking a recorded script and determining which of the recorded speech segments have acceptable phonetic units that can be used in speech synthesis.

The result of the invention is improved-sounding and more easily understood synthesized speech. As pointed out in the background section of the specification, even when the speech corpus is recorded by professional readers, many of the speech segments might be inaccurately pronounced or indistinct, making them unsuitable for use in speech synthesis. The invention segments the recorded speech corpus into segments that correspond to phonetic units and determines which of the phonetic units are suitable for use in the speech synthesis, and then collects (outputs) the acceptable phonetic units in order to make them available for speech synthesis.

As a result, the foregoing amendment to claim 1 is believed to overcome the problem that the claimed invention lacks patentable utility. Since the amended claim 1 is patentable, claims 2-9 dependent of the amended claim 1 are also patentable under 35 U.S.C. § 101.

**Response to Rejections Under 35 U.S.C. § 102**

The rejection of claims 1-7, 8-16 and 18 as being anticipated by Kuo et al. (Automatic Speech Segmentation

and Verification for Concatenative Synthesis) has been addressed by submitting the attached declaration showing that the relevant portions of the Kuo article are not by "others" as required by 35 U.S.C. § 102(a), *i.e.*, that the article is a **publication of the applicant's own invention.** Withdrawal of the rejection of claims 1-7, 8-16, and 18 under 35 U.S.C. § 102(a)is accordingly requested.

**Response to Rejections Under 35 U.S.C. § 103**

The rejection of claims 1-3, 5-7, 10-12, and 14-16 under 35 U.S.C. § 103(a) as being unpatentable over Chou et al. (Corpus-Based Mandarin Speech Synthesis with Contextual Syllabic Units Based on Phonetic Properties) in view of Modi et al. (US Patent 6,125,345) is respectfully traversed on the grounds that the Chou article and the Modi patent, whether considered individually or in any reasonable combination, fails to disclose or suggest an automatic speech segmentation and verification method and system that combines:

- ***segment*** **confidence measure verification** of all cutting points of N test speech unit segments to determine if the cutting points of the test speech unit segments are correct, and
- ***phonetic*****-confidence-measure** verification.

The Chou article does not disclose any sort of ***segment*** **confidence verification**, while the Modi patent teaches "utterance verification" rather than measuring the phonetic confidence measure for each phonetic unit and combining **both *phonetic* confidence and *segment* confidence measures**, as follows:

Chou's paper teaches an automatic segmentation method in section 2.2 (page 894). In particular, this paper discloses two kinds of segmentation process (semi-automatic

and automatic) as shown in Figure 1. For the semi-automatic processing, the outputs of the final segmentation from HMMs are adjusted with human experts. For the automatic processing, boundary correction rules are applied instead of human correction. However, the two processes don't cover the step 3 of the amended claim 1 in the invention, i.e., the segment-confidence-measure verifying step, which is a brand new idea for segmentation.

According to the Examiner, the claimed "segment-confidence-measure verification corresponds to the evaluation experiment of Chou. **This interpretation of the evaluation experiment of Chou is incorrect.** The evaluation experiment disclosed by Chou does not correspond to the segment-confidence-measure verifying step of the invention since (a) it essentially evaluates the effects of the **whole process**, (b) the output after the **manual correction** is set as the reference, and (c) the errors are calculated as the **difference** between the **determined boundaries** and the **reference boundaries** (page 894, column 2, line 40).

In contrast, in the claimed invention, the segment-confidence-measure verifying step is to compute a confidence measure for each segmentation boundary. In Chou's paper, the evaluation is to show the performance of the whole process for his proposed segmentation method. Further, in the claimed invention, the segment-confidence-measure verifying step is a part of automatic processing method, whereas Chou's evaluation is an experiment to evaluate his method's effect. Briefly, Chou doesn't teach any concept or methods of verification, and in particular fails to teach either segmentation or phonetic confidence measure for verification.

The deficiencies of the Chou article are not made up for by the Modi patent since Modi's patent discloses an utterance verification method and also does not disclose or

suggest the verification of phonetic and segment confidence measures. The purpose of Modi's invention is to recognize the utterance correctly by integrating multiple confidence measures of each portion of the utterance. In fact, in the background section of the present application, the inventors discuss the **prior art** utterance verification, which is used for the phonetic verification of a word, a phrase, or a sentence. The invention, on the other hand, only measures the phonetic confidence measure for each phonetic unit, and finally combines both phonetic confidence measure and segment confidence measure to determine the acceptance or rejection of each phonetic unit automatically by comparing to a predetermined threshold (the determining step of the amended claim 1). The purpose, function, target, and result achieved by the claimed invention are totally different from the conventional utterance verification as cited by the examiner from Modi's patent.

As cited, since Chou doesn't teach any verification concept or method, and the purpose and result of Modi's confidence measure are totally different from the measures verified by the method and system of amended claim 1, and claims 2-3, 5-7, 10-12, and 14-16. Because Chou and Modi do not teach any concept or means for achieving a segmentation confidence measure, much less a combination of the segmentation and phonetics confidence measures to thereby assure a correctly segmented and correctly enunciated phonetic unit, as claimed, withdrawal of the rejection of claims 2-3, 5-7, 10-12, and 14-16 under 35 U.S.C. § 103(a) is respectfully requested.

## CONCLUSION

In view of the foregoing remarks, reconsideration and allowance of the application are now believed to be in

order, and such action is hereby solicited. If any points remain in issue that the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

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Date: December 11, 2007

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